

REMARKS

Reexamination and reconsideration of claims 20-39 are respectfully requested. Additionally, Applicant respectfully requests entry of this reply into the record because it places the application in better condition for appeal.

Applicant amended the paragraph beginning on page 5, line 14 because the same reference character was used for two different features. Likewise, a proposed amendment is made to Figure 3 to correct the reference character and to add reference character 21. Additionally, applicant proposes adding new Figure 7 to further illustrate an embodiment having at least one optical fiber and strength members or filaments in a buffer tube. No new matter is being added since the specification and Figures 3 and 4 illustrate and provide basis for for an optical subunit having a tube (not numbered in original Figures 3 and 4) surrounding at least one optical fiber and strength members or filaments that are operative for at least partially de-coupling the at least one optical fiber from the tube.

Claims 20-39 were rejected under 35 U.S.C. sec. 103(a) applying U.S. Pat. No. 5,602,953 ('953) in view of the U.S. Pat. No. 4,707,074 ('074). The '953 patent discloses a communication cable with strands that include at least one electrical communication line 5 and at least one optical communication line 9. See the Abstract of the '953 patent. On the other hand, the '074 patent teaches a tube having a ripcord 9 embedded within the tube wall for easing access to the optical fibers therein by tearing the tube wall with the ripcord. See the Abstract of the '074 patent. For patents to be applicable under sec. 103(a), the combination of teachings must, *inter alia*, expressly or inherently, teach, disclose, or suggest each and every feature of the claimed invention. Additionally, motivation and suggestion to combine the patents must be present.

Applicant asserts that Office Action misinterpreted the

10/038,298

A1036A

Page 5

teaching of the '074 patent in relation to the claims of the present invention. Moreover, it is respectfully submitted that the purported modification does not teach, disclose, or otherwise suggest either explicitly, or inherently, each and every feature of claims 20, 28, and 35. The Office Action asserts that the '074 patent includes "a tube surrounding plurality of optical fibers and filaments (9) are provided on wall of the tube for de-coupling the optical fibers from the tube." See p. 2 of the Office Action dated April 9, 2003. This is an incorrect statement.

Applicant respectively asserts that the Office Action misinterpreted the features of the present invention with ripcord 9 of the '074 patent, which is disposed within a tube wall. The claims of the present invention recite a strength member or filaments that de-couple at least one optical fiber from the tube, thereby preserving optical performance of the optical fiber. On the other hand, the Office Action correctly states that ripcord 9 of the '074 patent facilitates "the removal of the [optical] fiber without the need to cut into the outer wall [of the tube] with a knife or like tool. See p. 2 of the Office Action dated April 9, 2003. This feature of the '074 patent is not related to the Applicant's claimed invention. Applicant respectively asserts that the '074 patent teaches a different structure that serves a different function than is claimed.

Claim 20 recites a composite cable unit including an optical sub-unit having a tube surrounding at least one optical fiber and strength members or filaments that are operative to at least partially de-couple said at least one optical fiber from the tube, an electrical sub-unit, and the optical and electrical sub-units being removably connected at a medial portion between the sub-units by a common jacket material.

Claim 28 recites a composite cable unit including an optical sub-unit having a tube surrounding at least one tight buffered

optical fiber and strength members or filaments that are operative to at least partially de-couple said at least one optical fiber from the tube, an electrical sub-unit, and the optical and electrical sub-units being removably connected at a medial portion between the sub-units by a common jacket material.

Claim 35 recites a composite cable unit including an optical sub-unit having a tube surrounding at least one optical fiber and strength members or filaments that are operative to at least partially de-couple the at least one optical fiber from the tube, an electrical sub-unit being a portion of a coaxial cable, and the optical and electrical sub-units being removably connected at a medial portion between the sub-units by a common jacket material.

It is respectfully submitted that the applied art, taken alone or in combination with the other art of record, does not implicitly or expressly teach, disclose, or suggest all of the features of the claims. First, the '074 patent teaches having a ripcord 9 disposed within a wall, thereby making ripping of the tube wall and accessing the optical therein easier. In other words, ripcord 9 is embedded within the tube wall and used for accessing the optical fibers within the tube by ripping the tube wall.

On the other hand, claims 20, 28, and 35, *inter alia*, recite a tube surrounding strength members or filaments that are operative to at least partially de-couple the optical fiber from the tube. The skilled artisan would have understood that the strength members or filaments of the present invention are located inside the tube, rather than embedded within the tube wall. Moreover, unlike the ripcord 9 of the '074 patent, the strength members or filaments of the present invention de-couples the optical fiber from the tube, i.e., de-coupling permits relative movement between the optical fiber and the tube wall. For example, during bending the strength members or filaments

allow movement between the optical fiber and the tube. The ripcord 9 of '074 patent can not de-couple the optical fiber from tube because ripcord 9 is embedded within the tube wall. For at least this reason, the Office Action failed to make a *prime facie* case of obviousness and the rejection should be withdrawn.

Second, the optical communication line 9 of the '953 patent requires that optical waveguides 11 are loosely disposed in a plastic shell 13. See Col. 2, ll. 53-55 of the '953 patent. In other words, all things being equal, if more components were disposed within the optical communication line 9 of the '953 patent it would decrease the "looseness" of the optical fibers in the inside the optical communication line 9. The '953 patent teaches away from this result. Additionally, if the optical communication line 9 was modified by increasing its size to maintain the same degree of "looseness" the optical communication line 9 would probably be larger than the electrical communication line 5. This would be an undesired result because it would subject optical communication line 9 to crush performance issues. See the '953 patent at Col. 1-2, ll. 66-2. In other words, since the optical communication line 9 is larger than the electrical communication line 5 it would most likely carry applied crush loads that can cause optical attenuation. The skilled artisan would have understood that optical attenuation is undesirable in a communication cable. Moreover, the skilled artisan would not be motivated to make the cable of the '953 patent larger because the cable is intended to be pulled through tubes of predetermined sizes. See the '953 patent at Col. 1, ll. 64-66.

Because the purported modification does not teach each and every feature of the claims, the Office Action failed to make a *prima facie* case of obviousness. For at least the reasons stated, withdrawal of the sec. 103(a) rejection of claims 20-39 is warranted and is respectfully requested.

Furthermore, contrary to the assertion in the Office Action,

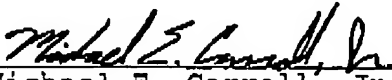
the skilled artisan would not have found it a matter of design choice to use tight buffered optical fibers in the fiber optic cable of the '953 patent. See p. 3 of the Office Action dated April 9, 2003. The skilled artisan would have understood that the plastic layer of the tight buffer most likely would stick to the tube during extrusion, thereby causing optical attenuation by preventing the optical fiber the freedom move in response to stress on the cable. For at least this reason, the Office Action failed to make a prima facie case with respect to claims 21, 28-34, and 39.

No fees are believed due in connection with this Reply. If any fees are due in connection with this Reply, please charge any fees, or credit any overpayment, to Deposit Account Number 19-2167.

Allowance of all pending claims is believed to be warranted and is respectfully requested.

The Examiner is welcomed to telephone the undersigned to discuss the merits of this patent application.

Respectfully submitted,


Michael E. Carroll, Jr.
Attorney
Reg. No. 46,602
P.O. Box 489
Hickory, N. C. 28603
Telephone: 828/901-6725

Date: May 14, 2003

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning at page 5, line 14 has been amended as follows:

Further, the invention can be practiced in the form of a composite cable unit 20 (Figure 3) having more than one twisted pair electrical conductors 16, and a multi-core optical fiber 12' [22]. Suitable exemplary multi-core optical fibers are disclosed in US-A-4000416 and US-A-5222172, both of which are incorporated by reference herein. Composite cable unit 20 can be part of a fan-out cable 40, and can be longitudinally disposed adjacent to, or helically (unidirectional) or SZ stranded about, a central member 22. Central member 22 can be, for example, a fiber or a glass reinforced plastic rod, or fibers impregnated with a polymeric resin. Composite cable unit 20 can be stranded with other fiber optic components, for example, tight buffered or loose buffered optical fiber components 24 or 26.

The paragraph beginning at page 7, line 9 has been amended as follows:

The present invention has thus been described with reference to the foregoing embodiments, which embodiments are intended to be illustrative of the present inventive concepts rather than limiting. Persons of ordinary skill in the art will appreciate that variations and modifications of the foregoing embodiments can be made without departing from the scope of the appended claims. For example, electrical conductor 16 can be any suitable electrical transmission component, e.g., a co-axial cable or a non-twisted conductor. Filaments 14 can be small impregnated fibers or rods surrounding or adjacent to the optical fiber. Any of the composite cable units can be part of a break-out cable. Fan-out or break-out cables of the present invention can include strength filaments adjacent to the cable units. Where wavelength

10/038,298

A1036A

Page 10

selection features are desired in the optical sub-unit, one or more periodic refractive indices can be written into the fiber before buffering, for example, as disclosed in US-A-4725110, US-A-5620495, US-A-5718738, and/or US-A-5818630, all of which are respectively incorporated by reference herein. For identification purposes, a craftsman may be able to distinguish between the optical and electrical sub-units without identification means; however, an identification means can be provided on either or both of the sub-units. The identification means can include different colors for the sub-units, one or more extruded or inked-on stripes 13 (Figure 2), or any other suitable identification means. Fan-out cables according to the present invention can include fiber optic cable components, for example, ripcords or water blocking yarns. As shown in Figures 3 and 7, the [The] optical sub-unit can include a buffer tube 21 with one or more optical fibers therein.